

# MBRJ20L45CTG

## Product Preview SWITCHMODE Power Rectifier 45 V, 20 A

### Features and Benefits

- Low Forward Voltage
- Low Power Loss/High Efficiency
- High Surge Capacity
- 150°C Operating Junction Temperature
- 20 A Total (10 A Per Diode Leg)
- Guard-Ring for Stress Protection
- This is a Pb-Free Device

### Applications

- Power Supply – Output Rectification
- Power Management
- Instrumentation

### Mechanical Characteristics:

- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight (Approximately): 1.9 Grams
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 50 Units Per Plastic Tube

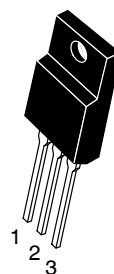
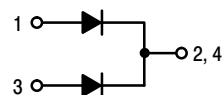
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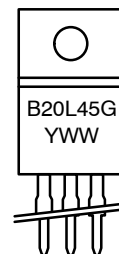
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## DUAL SCHOTTKY BARRIER RECTIFIERS 20 AMPERES, 45 VOLTS



TO-220 FULLPAK™  
CASE 221AH  
CT SUFFIX

### MARKING DIAGRAM



B20L45 = Device Code  
A = Assembly Location  
Y = Year  
WW = Work Week  
AKA = Polarity Designator  
G = Pb-Free Device

### ORDERING INFORMATION

Device	Package	Shipping
MBRJ20L45CTG	TO-220 (Pb-Free)	50 Units/Rail

\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

# MBRJ20L45CTG

## MAXIMUM RATINGS (Per Diode Leg)

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	45	V
Average Rectified Forward Current (Rated $V_R$ ) $T_C = 141^\circ\text{C}$	$I_{F(AV)}$	10	A
Peak Repetitive Forward Current (Rated $V_R$ , Square Wave, 20 kHz)	$I_{FRM}$	20	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	$I_{FSM}$	180	A
Operating Junction Temperature (Note 1)	$T_J$	-55 to +150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to +175	$^\circ\text{C}$
Voltage Rate of Change (Rated $V_R$ )	dv/dt	10,000	V/ $\mu\text{s}$
ESD Ratings: Machine Model = C Human Body Model = 3B		> 400 > 8000	V

## THERMAL CHARACTERISTICS

Maximum Thermal Resistance	Junction-to-Case Junction-to-Ambient	$R_{\theta JC}$ $R_{\theta JA}$	3.8 105	$^\circ\text{C/W}$
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## ELECTRICAL CHARACTERISTICS (Per Diode Leg)

Maximum Instantaneous Forward Voltage (Note 2) ( $I_F = 10\text{ A}$ , $T_C = 25^\circ\text{C}$ ) ( $I_F = 10\text{ A}$ , $T_C = 125^\circ\text{C}$ ) ( $I_F = 20\text{ A}$ , $T_C = 25^\circ\text{C}$ ) ( $I_F = 20\text{ A}$ , $T_C = 125^\circ\text{C}$ )	$V_F$	0.50 0.47 0.63 0.62	V
Maximum Instantaneous Reverse Current (Note 2) (Rated DC Voltage, $T_C = 25^\circ\text{C}$ ) (Rated DC Voltage, $T_C = 125^\circ\text{C}$ )	$i_R$	0.5 170	mA

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. The heat generated must be less than the thermal conductivity from Junction-to-Ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ .
2. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

# MBRJ20L45CTG

## TYPICAL CHARACTERISTICS

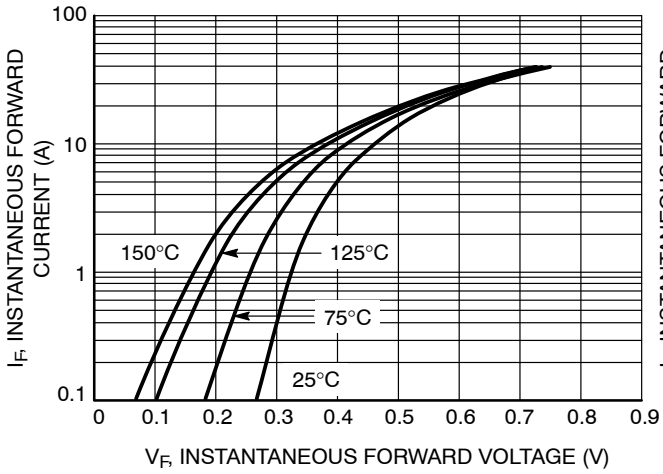


Figure 1. Typical Forward Voltage

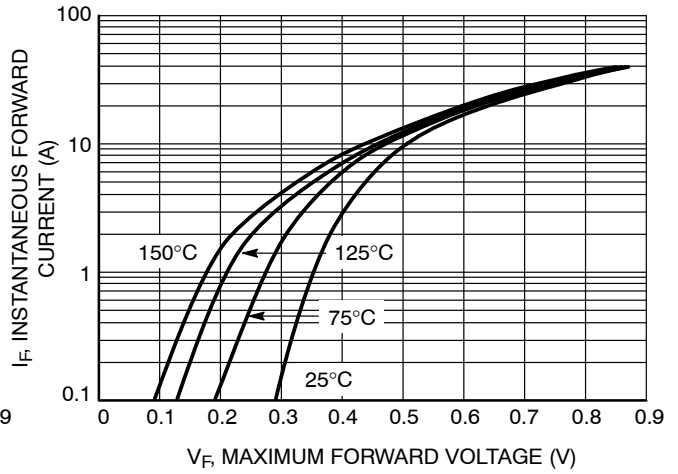


Figure 2. Maximum Forward Voltage

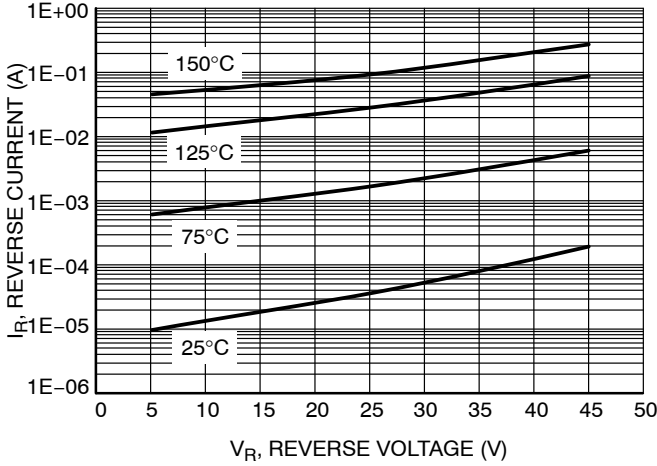


Figure 3. Typical Reverse Current

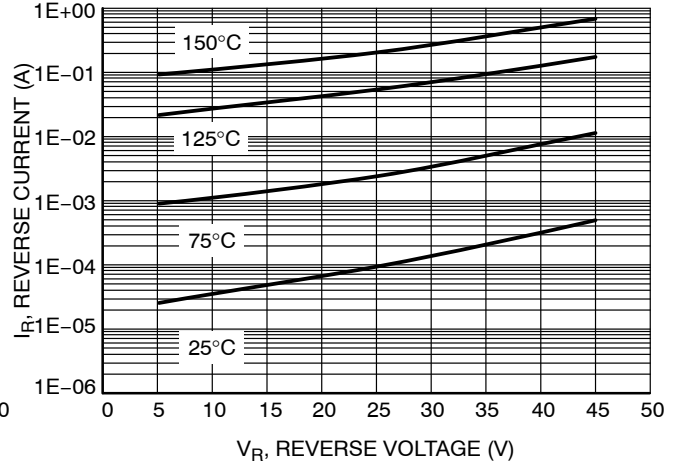


Figure 4. Maximum Reverse Current

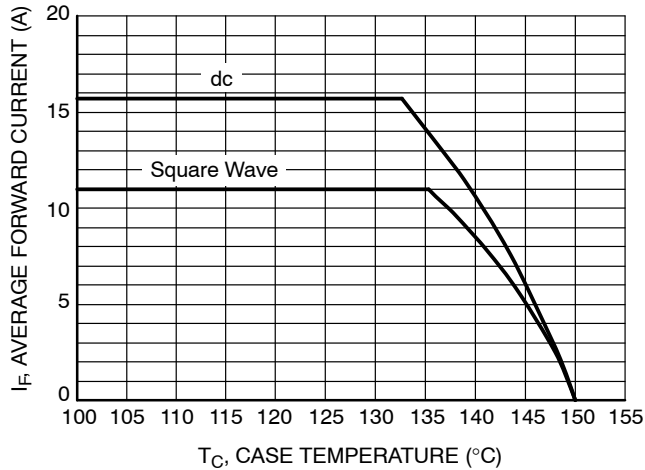


Figure 5. Current Derating

# MBRJ20L45CTG

## TYPICAL CHARACTERISTICS

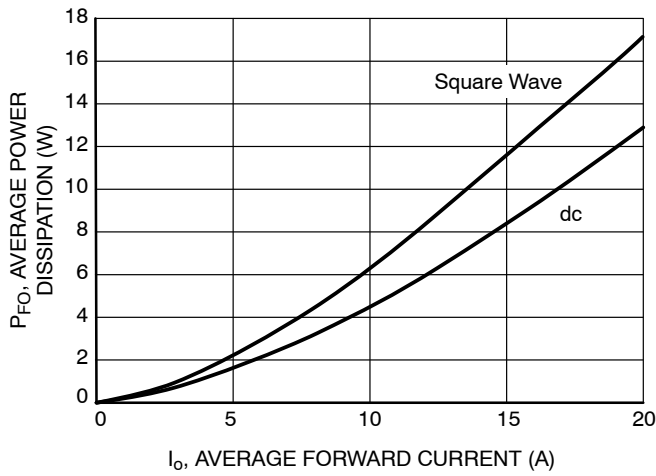


Figure 6. Forward Power Dissipation

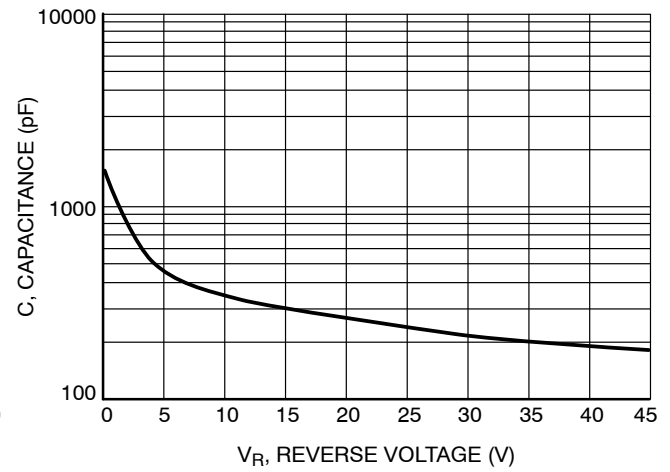


Figure 7. Typical Capacitance

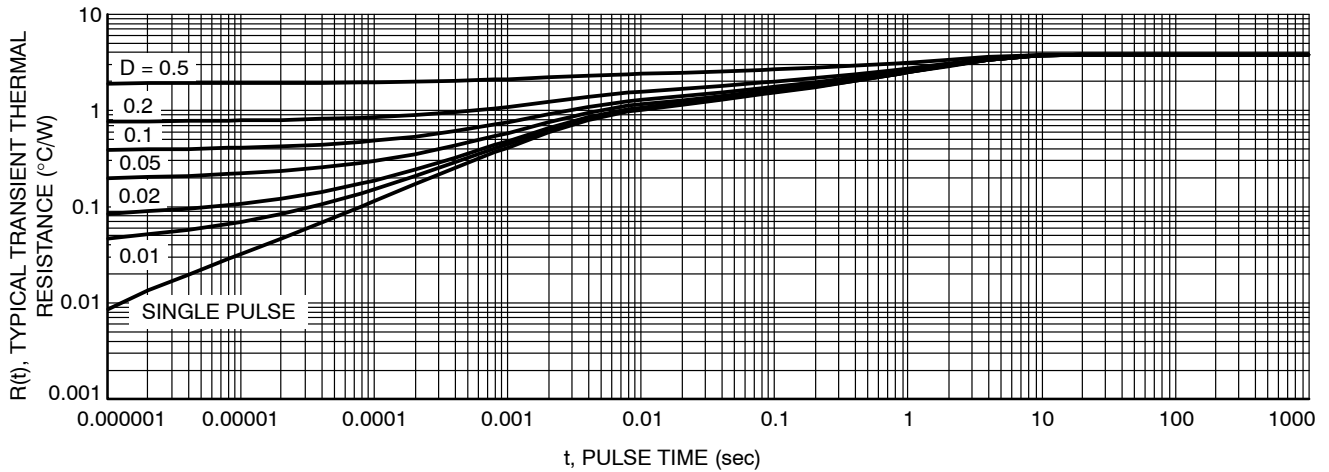
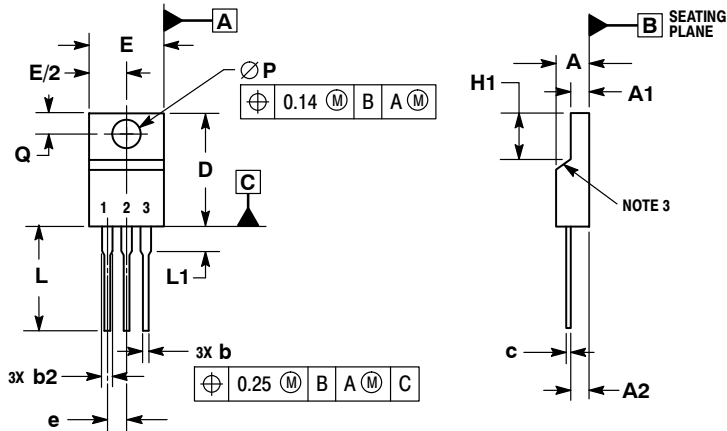


Figure 8. Typical Transient Thermal Response, Junction-to-Case

# MBRJ20L45CTG

## PACKAGE DIMENSIONS

### TO-220 FULLPACK, 3-LEAD CASE 221AH ISSUE C



#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR UNCONTROLLED IN THIS AREA.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH AND GATE PROTRUSIONS. MOLD FLASH AND GATE PROTRUSIONS NOT TO EXCEED 0.13 PER SIDE. THESE DIMENSIONS ARE TO BE MEASURED AT OUTERMOST EXTREME OF THE PLASTIC BODY.
5. DIMENSION b2 DOES NOT INCLUDE DAMBAR PROTRUSION. LEAD WIDTH INCLUDING PROTRUSION SHALL NOT EXCEED 2.00.

DIM	MILLIMETERS	
	MIN	MAX
A	4.30	4.70
A1	2.50	2.90
A2	2.50	2.70
b	0.54	0.84
b2	1.10	1.40
c	0.49	0.79
D	14.70	15.30
E	9.70	10.30
e	2.54 BSC	
H1	6.70	7.10
L	12.70	14.73
L1	---	2.80
P	3.00	3.40
Q	2.80	3.20

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